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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHOW, JEFFREY J	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/602,556	MILLIRON, TIMOTHY S.	
	Examiner	**Art Unit**	
	Jeffrey J. Chow	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 29 October 2007.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 21-41 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 21-41 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 29 October 2007 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 21 – 40, filed 03 July 2007, have been considered but are not persuasive.

Examiner notes that applicant reference to “claim 1" in the "Remarks/Arguments" will be interpreted as "claim 21".

Applicant argues that the field as claimed is different that parameters in Ahlquist, Jr. et al. (US 6,459,439) and therefore Ahlquist's pressure parameter and length parameter does not read on the claimed strength field and weighting field (pages 12 and 14). Ahlquist discloses a letter “M” being deformed (Figure 1) wherein tools are used to deform the model and wherein the pulling tool has a pressure parameter and a length parameter (Figures 2A – 2H), wherein the length parameter (strength field) determines the size (scaling the magnitude of the transformations) of the pull transformation from points 22a to 22b (column 5, lines 19 - 26, 35 - 48, and 51 - 53) and the pressure parameter (weighting field) can be used to vary the length (determining the relative influence of the set of scaled transformations) (column 6, lines 25 –

35). Applicant's claimed strength field and weighting field defined over the undeformed model does not uniquely overcome the Ahlquist's length parameter and pressure parameter. A field can be interpreted as a range, such as a “date field”, a “month field”, and a “year field”, where's Ahlquist's length parameter and pressure parameter are ranges and therefore read on the claimed strength field and weighting field.

Applicant further argues that Ahlquist's tools having the pressure parameter and length parameter can be positioned or "waved" over a model is different than the claimed strength fields and weighting fields defined over the undeformed model (pages 12 and 14). Ahlquist's tool carries the length parameter and the pressure parameter and having the tool in the world space of the letter “M” defines the tool itself and the length parameter and the pressure parameter carried by the tool over the undeformed letter "M".

Applicant argues that Ahlquist's pressure or length parameter would correspond to the tool and not the feature specifications (pages 12 and 14). Georgiev (US 2003/0184563) teaches a set of feature specifications (Figure 1: Draw first contour in source image 104; Figure 1: Modify first contour to arrive at a second contour 106). The tool in Ahlquist's system defines the length parameter and the pressure parameter over the undeformed letter “M”. Though the pressure and length parameter does correspond to the tool, the tool sets the starting point and end point, which reads on the claimed feature specifications, and therefore Ahlquist's length and pressure parameters correspond to the claimed feature specifications.

Applicant argues the motivation to combine Ahlquist with Georgiev is insufficient since Georgiev already provides the motivation (pages 13 and 14). The motivation to combine Ahlquist with Georgiev is to fine-tune the analytical function of Georgiev's system by adding the

length and pressure parameter to accurately modify a desired transformation result. Even if Georgiev teaches this motivation, the given motivation is a valid motivation to combine Ahlquist's system with Georgiev's system.

Applicant argues that Alhquist and Georgiev does not teach a deformation function is determined in addition to the set of transformations (page 14) in addition to the set of strength fields, and the set of weighting fields. Georgiev teaches an analytical function (transformation) that deforms a model from one point to another. Alhquist teaches pressure parameter (weighting field) and length parameter (strength field) that deforms a model from one point to another with the aid of the tool. The combination of Georgiev's and Alhquist's systems teaches this limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21 – 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Georgiev (US 2003/0184565) in view of Ahlquist et al. (US 6,459,439).

Regarding independent claim 21, Georgiev teaches a computer-implemented method of generating a graphical warp through transformation of an undeformed model to a deformed model (Figures 4 and 5), the method comprising receiving information specifying the undeformed model (Figure 1: Display source image 102), receiving a set of feature specifications

defined over the undeformed model, each feature specification comprising a source feature (Figure 1: Draw first contour in source image 104) and a target feature (Figure 1: Modify first contour to arrive at a second contour 106), receiving, independent of the set of feature specifications defined over the undeformed model, a set of transformations that map the source feature to the target feature in each feature specification in the set of feature specifications (Figure 1: Generate analytic function 108; paragraph 58: forward mapping). Georgiev did not expressly disclose receiving a set of strength fields corresponding to the set of feature specifications, the set of strength fields defined over the undeformed model for scaling the magnitude of transformations in the set of transformations to generate a set of scaled transformations, receiving, independent of the set of strength fields, a set of weighting fields corresponding to the set of feature specifications, the set of weight fields defined over the undeformed model for determining the relative influence of the set of scaled transformations, and generating the deformed model independent of receiving the set of feature specifications using a graphical warp through transformation of the undeformed model to the deformed model by applying the set of transformations, the set of strength fields, and the set of weighting fields to the undeformed model, however Georgiev discloses warping the source image to generate destination image using the analytic function 110 (Figure 1). Ahlquist discloses a letter M being deformed (Figure 1) wherein tools are used to deform the model from point 21a to 21b and wherein the pulling tool has a pressure parameter and a length parameter (Figures 2A – 2H), wherein the length parameter (strength field) determines the size (scaling the magnitude of the transformations) of the pull transformation from points 22a to 22b (column 5, lines 19 - 26, 35 - 48, and 51 - 53) and the pressure parameter (weighting field) can be used to vary the length

(determining the relative influence of the set of scaled transformations) (column 6, lines 25 – 35). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Georgiev's system by using Ahlquist's tools to modify the first contour to arrive at a second contour by using the length parameter and the pressure parameter to further define the influence of the transformation set by the analytical function and to deform the undeformed model using the analytical function, the pressure field and the length field. One would be motivated to do so because this provides users fine-tuning capabilities for accurately modifying using the analytical function to produce a desired transformation result. The generation of the analytic function provides the transformation, which is received independently from the first contour and the second contour. The pressure and length parameters of Ahlquist's tool are used to modify the first contour to arrive at the second contour and the pressure and length parameters are received independent from the first contour and the second contour, since the pressure and length parameters were define independent from the first contour and the second contour.

Regarding dependent claim 22, Georgiev teaches the set of feature specifications comprises a first feature specification comprising a source feature identifying a source position of a continuous feature and a target feature identifying a target position of the continuous feature (Figures 5: first path 140 being continuous and second path 142 being continuous).

Regarding dependent claim 23, Georgiev teaches the set of feature specifications comprises a first feature specification comprising a source feature identifying a source position of a discrete feature and a target feature identifying a target position of the discrete feature (paragraphs 63 – 90: analytic warping of pixels; paragraphs 91 – 111: analytic warping for color correction and gamut mapping).

Regarding dependent claim 24, Georgiev teaches the set of feature specifications comprises a first feature specification comprising a source feature identifying a source position of a feature point and a target feature identifying a target position of the feature point (paragraph 59: mapping from z_0 to $f(z_0)$).

Regarding dependent claim 25, Georgiev teaches the set of feature specifications comprises a first feature specification comprising a source feature identifying a source coordinate frame and a target feature identifying a target coordinate frame (paragraph 58: point p and q).

Regarding dependent claim 26, Georgiev teaches the set of feature specifications comprises a first feature specification comprising a source feature identifying a source curve and a target feature identifying a target curve (Figures 5: first path 140 and second path 142).

Regarding dependent claim 27, Georgiev teaches the set of feature specifications comprises a first feature specification comprising a source feature identifying a source surface and a target feature identifying a target surface (Claim 5: first image surface and second image surface).

Regarding dependent claim 28, Georgiev teaches the set of feature specifications comprises a first feature specification comprising a source continuous feature and a target continuous feature (Figures 5: first path 140 being continuous and second path 142 being continuous), and a second feature specification comprising a source discrete feature and a target discrete feature (paragraphs 63 – 90: analytic warping of pixels; paragraphs 91 – 111: analytic warping for color correction and gamut mapping).

Regarding dependent claim 29, Georgiev did not expressly disclose generating the deformed model comprises computing a sum of the set of scaled transformations weighted by the

set of weighting fields, for deforming the undeformed model to generate the deformed model. Ahlquist discloses the pressure being added to the length and the difference in pressure affects the deformation of the object (column 6, lines 25 – 35). The sum of the pressure and the length reads on the claimed sum. The pressure and the length read on the claimed set of scaled transformations weighted by the set of weighted fields. It would have been obvious for one or ordinary skill in the art at the time of the invention to modify Georgiev's system to incorporate Ahlquist's tools to calculate the deformation of an object. One would be motivated to do so because this provides a realistic in modifications based on user inputs.

Regarding independent claim 30, Georgiev teaches a computer-implemented method of generating a graphical warp, the method comprising receiving information specifying an undeformed model, receiving a parameter set specifying a warp (Figure 1: inputs of the analytic function 108), determining, based upon the parameter set, a set of transformations that map a source feature defined over the undeformed model to a target feature defined over the undeformed model (paragraph 58: forward mapping), and applying the deformation function to the undeformed model independent of receiving the parameter set to generate a deformed model (Figure 1: Warp the source image to generate destination image using the analytic function 110). Georgiev did not expressly disclose determining, based upon the parameter set, a set of strength fields defined over the undeformed model, and a set of weighting fields defined over the undeformed model, and determining a deformation function based upon the set of transformations, the set of strength fields, and the set of weighting fields, however Georgiev discloses warping the source image to generate destination image using the analytic function 110 (Figure 1). Ahlquist discloses a letter M being deformed (Figure 1) wherein tools are used to

deform the model from 21a to 21b and wherein the pulling tool has a pressure parameter and a length parameter (Figures 2A – 2H), wherein the length parameter (strength field) determines the size (scaling the magnitude of the transformations) of the pull transformation from points 22a to 22b (column 5, lines 19 - 26, 35 - 48, and 51 - 53) and the pressure parameter (weighting field) can be used to vary the length (determining the relative influence of the set of scaled transformations) (column 6, lines 25 – 35). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Georgiev's system by using Ahlquist's tools to modify the first contour to arrive at a second contour by using the length parameter and the pressure parameter to further define the influence of the transformation set by the analytical function and to deform the undeformed model using the analytical function, the pressure field and the length field. One would be motivated to do so because this provides users fine-tuning capabilities for accurately modifying using the analytical function to produce a desired transformation result. Ahlquist discloses the first contour and the second contour, which reads on the parameter set. The generation of the analytic function provides the transformation, which is received independently from the first contour and the second contour. The pressure and length parameters of Ahlquist's tool are used to modify the first contour to arrive at the second contour and the pressure and length parameters are received independent from the first contour and the second contour, since the pressure and length parameters were define independent from the first contour and the second contour.

Regarding dependent claim 31, Georgiev did not expressly disclose the set of transformations comprises parameterized transformations, the determining comprises applying a sampling function to the set of parameterized transformations, the set of strength fields, and the

set of weighting fields to generate a set of discretized transformations, a set of sampled strength fields, and a set of sampled weighting fields, and determining the deformation function comprises computing the deformation function using the set of discretized transformations, the set of sampled strength fields, and the set of sampled weighting fields. Ahlquist discloses users can input different transfer functions, such as the equation 1 stated where the function is parametized by D and length (column 6, lines 4 – 24), which suggests the claimed set of transformations comprises parameterized transformation. Ahlquist discloses the length, pressure, and strength can be inputted through a keypad or determined through a pressure sensitive tablet (column 3, lines 15 – 35 and column 7, lines 61 – 66), which suggests the claimed determining comprises applying a sampling function to the set of parameterized transformation, the set of strength fields, and the set of weighting fields to generate a set of discretized transformations, a set of sampled strength fields, and a set of sampled weighting fields and the claimed determining the deformation function comprises computing the deformation function using the set of discretized transformations, the set of sampled strength fields, and the set of sampled weighting fields. Ahlquist discloses manipulation of Bezier curve (column 8, lines 54 – 67 and column 9, line 61 – column 10, line 19) and noted that Bezier curves can be represented in parametric form (column 1, lines 25 – 39). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Georgiev's system to incorporate sampling functions and parameterized transformations. One would be motivated to do so because this save memory by storing a function that defines a path or a surface by calculating points on the path or the surface instead of storing multiple points that defines a path or a surface.

Regarding independent claim 32 and dependent claim 33, claims 32 and 33 are similar in scope as to claims 21, 29, and 31, thus the rejections for claims 21, 29, and 31 hereinabove are applicable to claims 32 and 33.

Regarding independent claims 34, 37, 39, 40, and 41, claims 34, 37, 39, 40, and 41 are similar in scope as to claims 21 and 30, thus the rejections for claims 21 and 30 hereinabove are applicable to claims 34, 37, 39, 40, and 41. Georgiev teaches processor and a memory (Figure 10), which reads on the claimed processor and the claimed memory coupled to the processor, the memory configured to store a plurality of instructions executable by the processor.

Regarding dependent claims 35 and 36, claims 35 and 36 are similar in scope as to claims 22 and 23, thus the rejections for claims 22 and 23 hereinabove is applicable to claims 35 and 36.

Regarding dependent claim 38, claim 38 is similar in scope as to claim 31, thus the rejection for claim 31 hereinabove is applicable to claim 38.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey J. Chow whose telephone number is (571)-272-8078. The examiner can normally be reached on Monday - Friday 10:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571)-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JJC

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SUPERVISORY PATENT EXAMINER